

# EUROPEAN PATENT OFFICE

## Patent Abstracts of Japan

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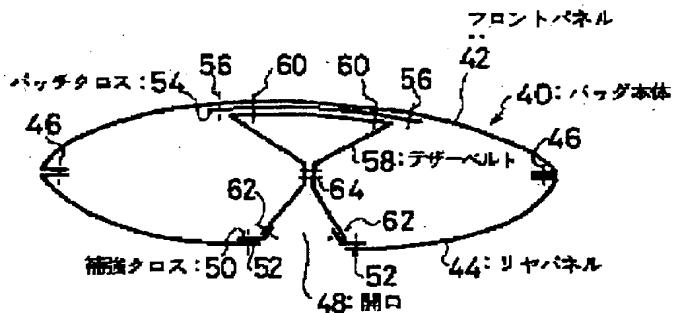
APPLICATION DATE : 30-03-93  
APPLICATION NUMBER : 05071771

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INVENTOR : OKADA HIROSHI;

INT.CL. : B60R 21/16

TITLE : AIR BAG



ABSTRACT : PURPOSE: To extend the length of each tether belt at the same time when a bag main body is developed by releasing the binding strength of a binding means of the tether belt after at least a part of an air bag is developed to the side.

CONSTITUTION: When an inflator is activated at the time of vehicle collision, a bag main body 40 is developed by the gas blown out of an inflator. When the bag main body 40 is sufficiently developed to the side, the pressure of the gas from the inflator primarily serves as a force for proceeding a front panel 42. The tensile stress of no less than a predetermined level is added to a sewing thread 64 by which a tether belt 58 is bound, and the sewing thread 64 is cut. The bound condition of each tether belt 58 is thus released, and the tether belt 58 becomes independent. The front panel 42 is developed until the tether belt 58 is extended straight.

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**CLAIMS**

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**[Claim(s)]**

[Claim 1] The body of a bag developed by the circle configuration, and opening for inflator engagement prepared in the center of the rear face of this body of a bag, In the air bag which has two or more TEZA belts with which the end was connected with the periphery section of this opening, and the other end was connected with the front face of this body of a bag It is the air bag characterized by being what cancels union after it comes to band together with a union means by the part the middle in these TEZA belts and some air bags [ at least ] develop the union reinforcement of this union means to the side.

[Claim 2] It is the air bag characterized by said union means being at least one of sewing thread, adhesives, and the flat-surface fasteners in claim 1.

[Claim 3] It is the air bag characterized by having the flap which said union means is jutted out of one TEZA belt in claim 1, and has covered other TEZA belts.

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**DETAILED DESCRIPTION**

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**[Detailed Description of the Invention]****[0001]**

[Industrial Application] This invention relates to the air bag which develops at the time of a car collision and takes care of driver's seat crew. This invention relates to the air bag for driver's seats improved so that an air bag might develop to the upper and lower sides or a longitudinal direction quickly in more detail.

**[0002]**

[Description of the Prior Art] In emergency, such as a car collision, the air bag equipment for driver's seats formed in the steering of an automobile expands an air bag quickly with the pressure of the gas emitted from an inflator (expansion), and takes care of crew.

[0003] In the above air bag equipment for driver's seats, when an inflator operates, it is desirable that an air bag develops quickly to the side (the upper and lower sides and longitudinal direction) to crew.

[0004] Drawing 9 is a perspective view showing the condition that the air bag for driver's seats developed, and the body 14 of a bag of an air bag is constituted by sewing up the periphery section of the front panel 10 and the rear panel 12 which consist of respectively circular cloth. The opening 16 for accepting the head side of an inflator is formed in the center of the rear panel 12. The small opening 18 for insertion of the bolt and pin for attaching the body 14 of a bag in a retainer, a rivet, etc. is formed in the perimeter of this opening 16. 20 is a vent hole for missing the gas within the body 14 of a bag, when the driver has plunged into the air bag.

[0005] In order to prevent developing so that this air bag may project toward the front, as shown in drawing 11-13, the front panel 10 and the rear panel 12 are connected with the TEZA belt (tether belt, hanging string) 22. In addition, this body 14 of a bag is attached in a retainer 30, and is covered with the module covering 32. When an air bag develops by the gas from an inflator 34, the module covering 32 cleaves as a graphic display. When the TEZA belt 22 stretches with a pin at the time of this air bag expansion, it is prevented that the front panel 10 moves forward more than it.

[0006] By the way, as for an air bag, developing to the side early if possible is desirable. Therefore, as shown in drawing 10, the tack of the middle of the TEZA belt 22 is carried out with sewing thread 24, a loop formation 26 may be made and the die length of the TEZA belt 22 may be shortened.

[0007] The body 14 of a bag develops quickly to the side as it is drawing 10 since the die length of the TEZA belt 22 is short by this loop formation 26 when an air bag is developed by the gas from an inflator. If an air bag fully develops to the side, the gas pressure of an inflator will act as a pressure which mainly pushes the front panel 10 on the front. Consequently, sewing thread 24 snaps, the TEZA belt 22 becomes long, and the front panel 10 develops to the front.

**[0008]**

[Problem(s) to be Solved by the Invention] Since it is necessary to make it sewing thread 24 snap almost simultaneous also in any of two or more TEZA belts 22 in the air bag which makes the

loop formation 26 with sewing thread 24 to the TEZA belt 22 as shown in drawing 10, it is necessary to perform uniformly attaching by sewing by sewing thread 24 also in any of each TEZA belt 22. For this reason, attaching by sewing of the TEZA belt 22 had taken time and effort.

[0009] This invention aims at offering the air bag improved so that the die length of each TEZA belt might become long all at once, when the body of a bag is developed.

[0010] Moreover, this invention aims at offering the air bag developed to the side to homogeneity quickly at the time of expansion actuation.

[0011]

[Means for Solving the Problem] The body of a bag with which the air bag of claim 1 is developed by the circle configuration, and opening for inflator engagement prepared in the center of the rear face of this body of a bag, In the air bag which has two or more TEZA belts with which the end was connected with the periphery section of this opening, and the other end was connected with the front face of this body of a bag After it comes to band together with a union means by the part the middle in these TEZA belts and some air bags [ at least ] develop the union reinforcement of this union means to the side, it is characterized by being what cancels union.

[0012] The air bag of claim 2 is characterized by said union means being at least one of sewing thread, adhesives, and the flat-surface fasteners in claim 1.

[0013] In claim 1, said union means is jutted out of one TEZA belt, and the air bag of claim 3 is characterized by having the flap which has covered other TEZA belts.

[0014]

[Function] In the air bag of claim 1, if the gas from an inflator is introduced in the body of a bag, the front panel of the body of a bag will move forward so that a TEZA belt may be stretched with a pin. Of course, the body of a bag is developed also in the side in the meantime. If the front panel moves forward until a TEZA belt stretches with a pin, inflator gas pressure will act as a pressure which makes the side mainly develop the body of a bag, and the body of a bag will develop it greatly to the side. If the body of a bag fully develops to the side, inflator gas pressure will act as a pressure which mainly pushes the front panel on the front. If it does so, union of the union means of a TEZA belt will be canceled, a TEZA belt will become independent respectively, and each TEZA belt will become long. Consequently, the front panel moves forward until a TEZA belt stretches with a pin, and expansion of an air bag is completed.

[0015] In the air bag of claim 2, connection of each TEZA belt is canceled all at once.

[0016] In the air bag of claim 3, each TEZA belt is released for a flap from a union condition by open Lycium chinense.

[0017]

[Example] With reference to a drawing, an example is explained below. The sectional view of the air bag which drawing 1 requires for the example of this invention, the perspective view showing [ 2 ] the union part of a TEZA belt, and drawing 3 are III-III of drawing 2. It is the sectional view which meets a line. Moreover, drawing 4 is a sectional view showing the expansion condition of the air bag concerning this example.

[0018] The body 40 of a bag of the air bag concerning this example is constituted by suturing the front panel 42 and the rear panel 44 in those periphery parts. 46 shows the sewing thread of this periphery. The opening 48 for making an inflator insert in is formed in the center of the rear panel 44. The reinforcement cross 50 of a ring form is sewn on the perimeter part of this opening 48 by sewing thread 52. Although a graphic display is not carried out, as this reinforcement cross 50 and rear panel 44 are penetrated, opening in which the bolt and pin for attaching the body 40 of a bag in a retainer, a rivet, etc. are made to insert is prepared.

[0019] The circular patch cross 54 is sewn on the rear face of the front panel 42 by sewing thread 56. The TEZA belt 58 which connects this front panel 42 and rear panel 44 is sewn on the front panel 42 and the rear panel 44 by sewing thread 60 and 62. That middle, a part joins this TEZA belt 58 by stitching with the sewing thread 64 as a union means, it is carried out, and has become a

bundle. In addition, in this example, a total of six TEZA belts 58 applies between the front panel 42 and the rear panel 44, and they are passed.

[0020] Thus, as usual, the constituted air bag is covered with module covering, after having been attached and folded up by the retainer. An inflator is inserted in said opening 48.

[0021] If this inflator operates at the time of a car collision, the body 40 of a bag will be developed by inflator blowout gas. If it is in early stages of this expansion, yarn 64 has bundled each TEZA belt 58, and it is close as it is indicated in drawing 1 as the front panel 42 and the rear panel 44. And the body 40 of a bag is quickly developed by the side.

[0022] If the body 40 of a bag is fully developed by the side as shown in drawing 1, the gas pressure from an inflator will act as force of mainly advancing the front panel 42 (upper part migration of drawing 1). If it does so, the tensile stress more than predetermined will be applied to the sewing thread 64 which has banded the TEZA belt 58 together, and this sewing thread 64 will snap. The union condition of each TEZA belt 58 will be canceled, and if it does so, as shown in drawing 4, the TEZA belt 58 will become independent. Consequently, the front panel 42 is developed until the TEZA belt 58 will be extended straightly.

[0023] The perspective view showing the TEZA belt union part of the air bag which drawing 5 requires for another example of this invention, the sectional view where drawing 6 meets the VI-VI line of drawing 5, and drawing 7 are perspective views of TEZA belt 58a.

[0024] In this example, five TEZA belts 58 have banded together by the flaps 70 and 72 of one TEZA belt 58a. That is, five TEZA belts 58 pile up and TEZA belt 58a piles up to this further. And flaps 70 and 72 are folded like the arrow head A of drawing 7, and the TEZA belt 58 is held by this. As shown in drawing 6, the TEZA belts 58 and 58a will be in a union condition by connecting flaps 70 and 72 with sewing thread or adhesives.

[0025] Thus, also in the air bag which has the TEZA belt which banded together, when an air bag develops, an air bag develops to the side first, flaps 70 and 72 desert after that, and a total of six TEZA belts 58 and 58a becomes independent, respectively. And by this, as shown in drawing 4, the front panel moves forward and expansion of an air bag is completed.

[0026] In addition, in order to combine flaps 70 and 72, as shown in drawing 8 besides adhesives or sewing thread, a flat-surface fastener 74 like a piece of Velcro (trade name) may be used.

[0027] Also in said example of Figs. 1 thru/or 3, although the TEZA belt 58 has banded together with sewing thread 64, you may band together with adhesives.

[0028] Although six TEZA belts are used in the above-mentioned example, a TEZA belt should just be two or more. It is suitable to be arranged uniformly [ around opening 48 ] with a natural thing by this TEZA belt.

[0029]

[Effect of the Invention] If it is in the air bag of this invention as above, an air bag develops to the side first at the time of inflator actuation, by canceling union of a TEZA belt after that, the front panel moves forward and expansion of an air bag is completed. The union means of this TEZA belt bands together all the TEZA belts that have connected the front panel and the rear panel in the shape of a bundle, and union is canceled all at once. Therefore, the front panel comes to move forward uniformly and an air bag is developed in the well-organized configuration. In addition, union of a TEZA belt is easy for the air bag of claims 2 and 3, and it is simple for a fabrication of an air bag.

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**DESCRIPTION OF DRAWINGS****[Brief Description of the Drawings]**

[Drawing 1] It is the sectional view of the air bag concerning an example.

[Drawing 2] It is the perspective view showing the TEZA belt union part of the air bag concerning an example.

[Drawing 3] III-III of drawing 2 It is the sectional view which meets a line.

[Drawing 4] It is the sectional view showing the expansion condition of the air bag concerning an example.

[Drawing 5] It is the perspective view showing the union part of the TEZA belt concerning another example.

[Drawing 6] It is the sectional view which meets the VI-VI line of drawing 5.

[Drawing 7] It is the perspective view of TEZA belt 58a used for an example.

[Drawing 8] Furthermore, it is the sectional view of a TEZA belt union part used for another example.

[Drawing 9] It is the perspective view of an air bag.

[Drawing 10] It is the sectional view showing the conventional air bag.

[Drawing 11] It is the sectional view showing the expansion condition of the conventional air bag.

[Drawing 12] XII-XII of drawing 11 It is line view drawing.

[Drawing 13] It is the sectional view which meets the XIII-XIII line of drawing 11.

**[Description of Notations]**

10 42 Front panel

12 44 Rear panel

14 40 Body of a bag

22, 58, 58a TEZA belt

16 48 Opening

64 Sewing Thread as a Union Means

70 72 Flap

74 Flat-Surface Fastener

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## \* NOTICES \*

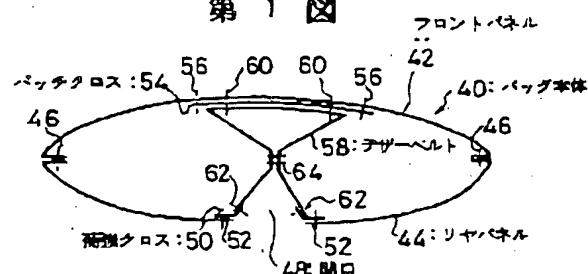
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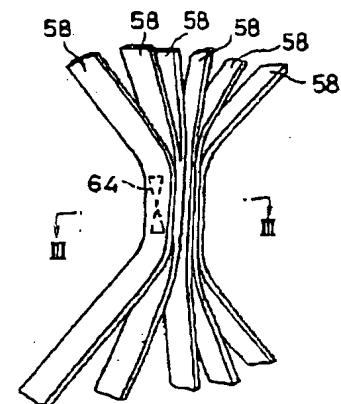
## DRAWINGS

[Drawing 1]

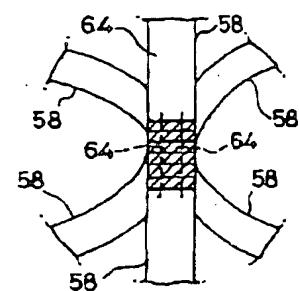
第 1 図

[Drawing 2]

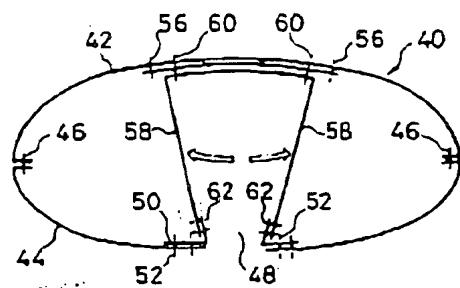
第 2 図

[Drawing 3]

第 3 図

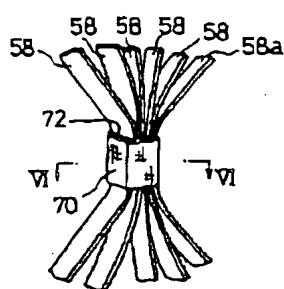
[Drawing 4]

第 4 図



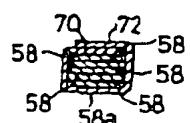
[Drawing 5]

第 5 図



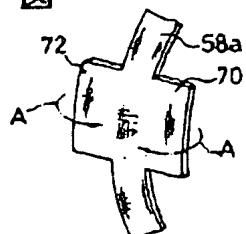
[Drawing 6]

第 6 図



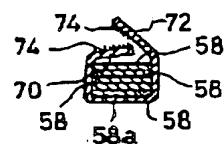
[Drawing 7]

第 7 図



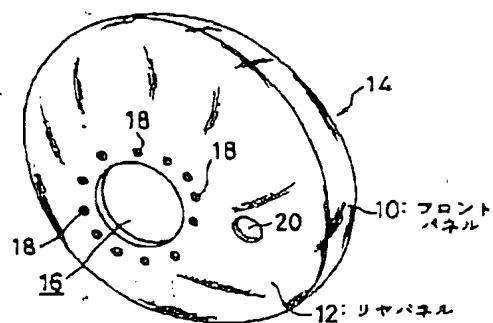
[Drawing 8]

第 8 図



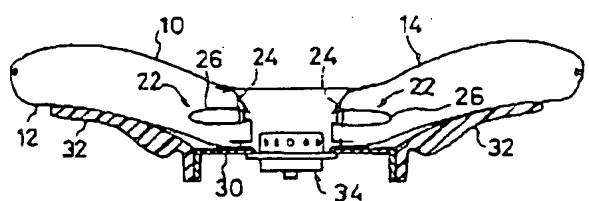
[Drawing 9]

第 9 図



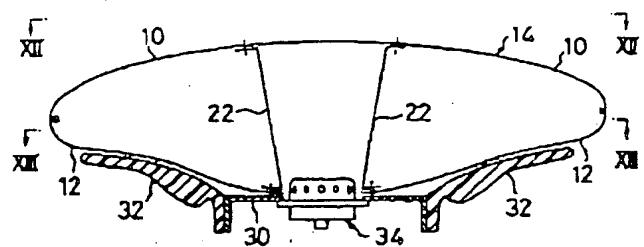
[Drawing 10]

第 10 図



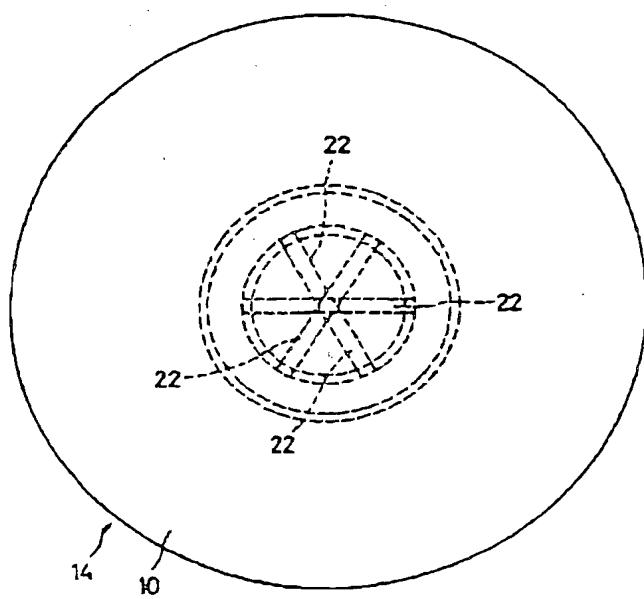
[Drawing 11]

第 11 図



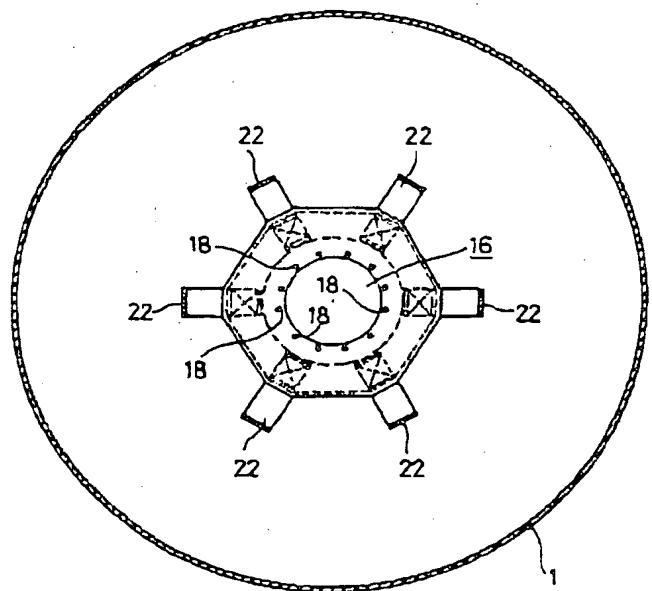
[Drawing 12]

第 12 図



[Drawing 13]

第 13 図



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